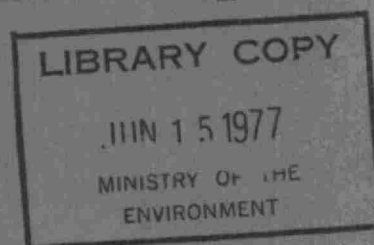


COTTAGE POLLUTION SURVEY
SMITH BAY
OF KAWIGAMOG LAKE
BLAIR TOWNSHIP
DISTRICT OF PARRY SOUND

SEPTEMBER 1976

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COTTAGE POLLUTION SURVEY

SMITH BAY OF KAWIGAMOG LAKE

M - PLAN 272 AND M - PLAN 302

BLAIR TOWNSHIP

DISTRICT OF PARRY SOUND

SEPTEMBER 1976

Prepared by: Municipal & Private Abatement Section
Ministry of the Environment.

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- Chemical Analyses

SUMMARY

The Smith Bay Campers' Association of Kawigamog Lake requested that the Ministry of the Environment conduct a cottage pollution survey of the area described on M - Plan 272 and M - Plan 302 on Smith Bay of Kawigamog Lake, Blair Township. This request followed a sampling program undertaken by the Campers Association in which the results indicated a possible rise in coliform bacteria levels. As a result of this request, a cottage pollution survey was carried out by members of the Municipal & Private Abatement staff of this Ministry in August 1976. The objective of the survey was to determine if the existing cottages were adversely effecting the water quality condition of Smith Bay and, if so, how to rectify the contamination.

No previous survey results were available for the sampled area, with the exception of water samples taken by the residents in the summers of 1975 and 1976.

The survey was conducted during the month of August to ensure the use of the majority of the summer residences and obtain results representative of the effects of maximum usage upon the quality of the lake water, and individual sewage systems. All 40 lots of M - Plan 272 and M - Plan 302 were inspected to determine the condition, type, and location of individual sewage systems and the sources of water supplies utilized. Surface water samples were obtained from 10 stations in the bay and analyzed for bacteriological and chemical quality. The sampling stations correspond with the locations of the samples obtained by the residents.

It was ascertained that the majority of sewage systems consisted of pit privies which were located well over the minimum distance requirements as outlined in Ontario Regulation 229/74 of this Ministry. Wash water, on the most part, was disposed of in leaching pits which also complied with the minimum distance requirements. Water supply varied from pressure systems to pails, with one cottager importing water.

Water quality conditions of the bay reflected relatively high total coliform counts for drinking water purposes, but these counts were well within the limits for recreational use. The coliform levels are felt to be caused by the close proximity of swamps on the south shore of Smith Bay and also the backwater affect of the bay itself.

No problems with individual sewage systems were encountered at the time of the survey with the exception of one, which was rectified. These results are attributed to the distances to the water, the soil depth and composition, and the relatively small amounts of water used.

The cottage pollution survey carried out in the Smith Bay area of Kawigamog Lake indicates no appreciable impairment of the water quality conditions of Smith Bay by the existing sewage systems.

GENERAL

LOCATION

The area of the study is entirely within Blair Township on the north shore of Smith Bay of Kawigamog Lake (see Appendix A-1) and is identified by M - Plan 272 and M - Plan 302 (see Appendix A-1). Access to the study area is by Highway 522 (formally Lost Channel Road) and the Smith Bay Road to the public water access on Smith Bay.

History

Smith Bay was opened to cottage development in February 1966 with the establishment of 20 lots (M - Plan 272) by the Ministry of Natural Resources. An additional 20 lots were established in April 1969 (M - Plan 302). The level of Kawigamog Lake is artificially regulated by a dam at the Pickerel River.

Topography

The general topography of the survey area consists of undulating rock ridges sloping downward to the lake. Soil consists of a clay-sand nature of varying depth overlying bedrock.

Survey Procedure

Due to the fact that most of the residents of the survey area reside at their cottages on weekends, the use of a questionnaire was eliminated. Each lot was inspected and plans drawn to locate the sewage systems, buildings and water supply. These diagrams have not been included in the

report, but are on file at the Sudbury District Office of this Ministry. Surface water samples were obtained at 10 stations on the bay throughout the study area, and analysed for bacteriological and chemical quality. The stations correspond with the stations used by the residents in their bacteriological sampling during the two previous summers, (see Appendix A-2), thus providing a comparative history of water quality conditions.

WATER SUPPLY

Water supply for the existing 40 lots consists of lake water with the exception of 2 cases. Twenty-four lots utilize pressure water systems. Residents of fourteen lots carry water by pail and the resident of one lot obtains water from a fifteen foot dug well. One resident imports water from an external source.

Surface water samples were obtained at 10 stations (one sample at each station) on Smith Bay, approximately 5 meters from the shoreline, and analysed for bacteriological and chemical quality. The Ministry of the Environment laboratories in Toronto analysed the samples for chemical quality and the Ministry of Health laboratories in Sudbury examined the samples for bacteriological quality.

Results of the analyses indicated counts of 0 to 75 total coliform per 100 ml and 0 to 2 faecal coliform per 100 ml (see Appendix B - Table 1) which exceeds this Ministry's permissible criteria and is therefore unacceptable for drinking water purposes unless boiled or chlorinated. It should be emphasized, however, these counts are well within the recreational guidelines for surface water. It is suspected that the bacteriological contamination is primarily due to the close proximity of swamps, and their subsequent inflow to the bay. The situation is also attributed to the backwater condition of the bay, which does not facilitate a "wash through" or flushing effect needed to supply fresh water to the Bay.

It should be noted that previous samples taken by the Campers Association indicated a higher degree of bacterial contamination (2 - 80+ total coliform /100 ml and 0 - 80+ fecal coliform /100 ml). A comparison of these results and the 1976 survey results indicate a general improvement in water quality has occurred. The apparent improvement should be considered with the caution that bacterial concentrations are in fact extremely variable and sample results are dependent upon numerous factors (i.e. amount of rainfall, time of sampling, water temperature, etc.). The survey results do indicate however, that little deterioration of water quality if any, has occurred from a bacteriological point of view during the three year period.

Chemical quality, based upon the sample analytical results, indicated concentrations associated with normal surface waters (Appendix B - Table 2).

SANITARY WASTE DISPOSAL

Existing sewage systems within the study area consist of septic tanks with leaching beds, pit privies, and leaching pits. The lots with septic systems, combined with pressure water systems, all have road access (lots 1 through 7). The remaining 33 lots, 17 of which contain pressure water systems, are serviced by pit privies and leaching pits with the exception of one lot which is serviced by a leaching pit and cesspool.

All the existing sewage systems met the minimum distance requirements of this Ministry with the exception of one. A leaching pit, used for the disposal of washwaters, was situated 20 feet from the lake. The owner, when informed of this, indicated the situation would be remedied immediately.

It should be noted that present Ministry policy requires that a septic tank and tile field or sewage holding tank be installed wherein a pressure water system is utilized. This is considered necessary to treat the increased waste loadings which normally result with the usage of pressure water systems. It is recognized, for the Smith Bay situation that the summer residences were constructed prior to the establishment of this policy. Since the usage is seasonal and the present sewage systems appear to be functioning adequately, it is felt that the upgrading of these systems is not required at this time. However, if a deterioration of water quality becomes evident in the future, or usage is increased substantially, upgraded sewage systems should be installed.

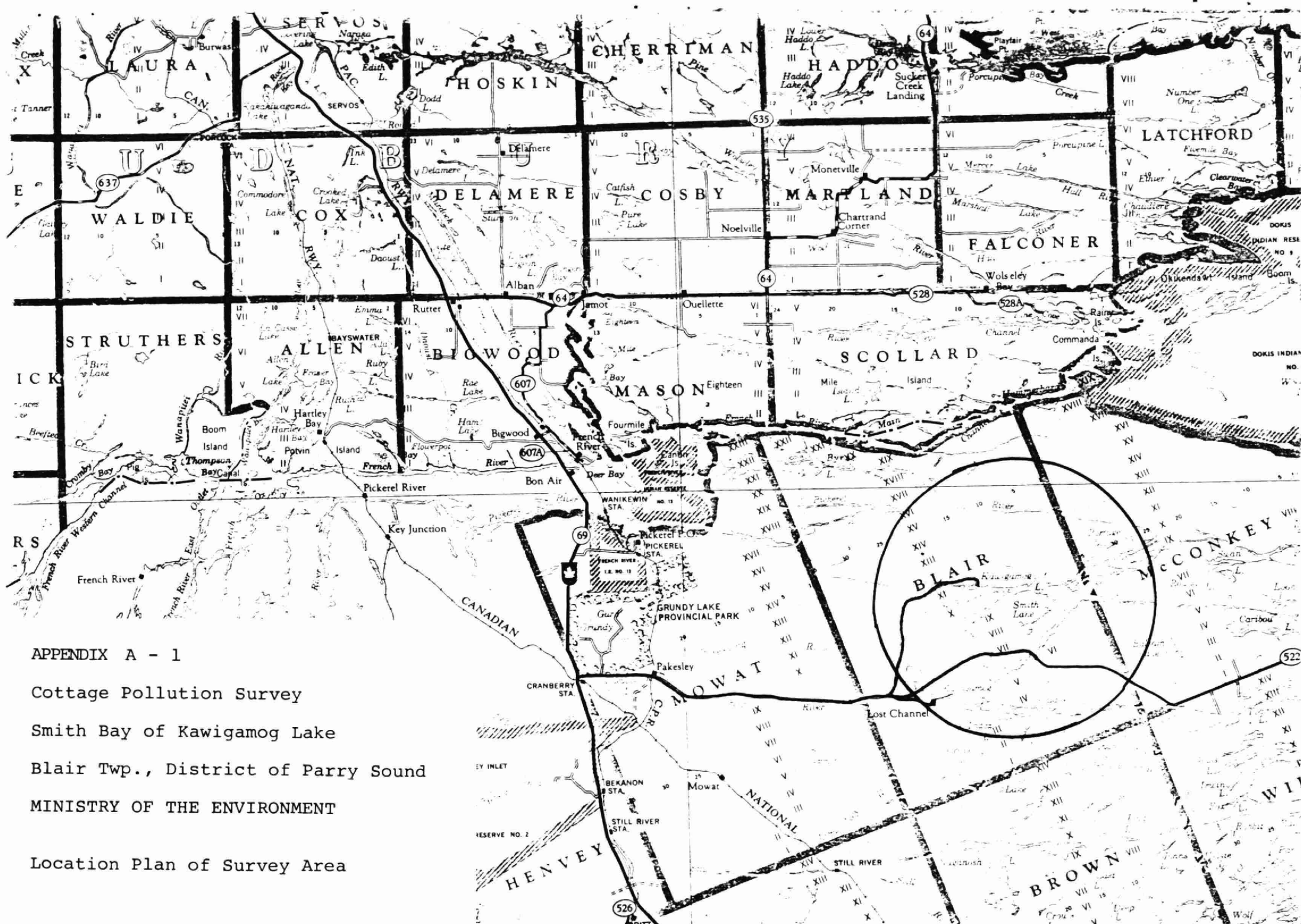
CONCLUSIONS

The results of the cottage pollution survey for Smith Bay indicated slight bacterial contamination felt to be caused by inflow from neighboring swamps and the backwater effect of the bay itself. While counts of these levels are typical of surface waters and within the standards for recreational purposes, all surface water used for personal consumption should be boiled or disinfected.

One minor problem with respect to private sewage systems was encountered and rectified during the individual lot inspections. Analytical results for the lake station samples indicated little or no deterioration of water quality resulting from the operation of existing sewage systems. If additional lots are created in the future or the usage of the present lots is increased, the installation of upgraded sewage systems should be considered where pressure water systems are in use.

Prepared by: J. C. Bagshaw,

Municipal & Private Abatement



APPENDIX A - 1

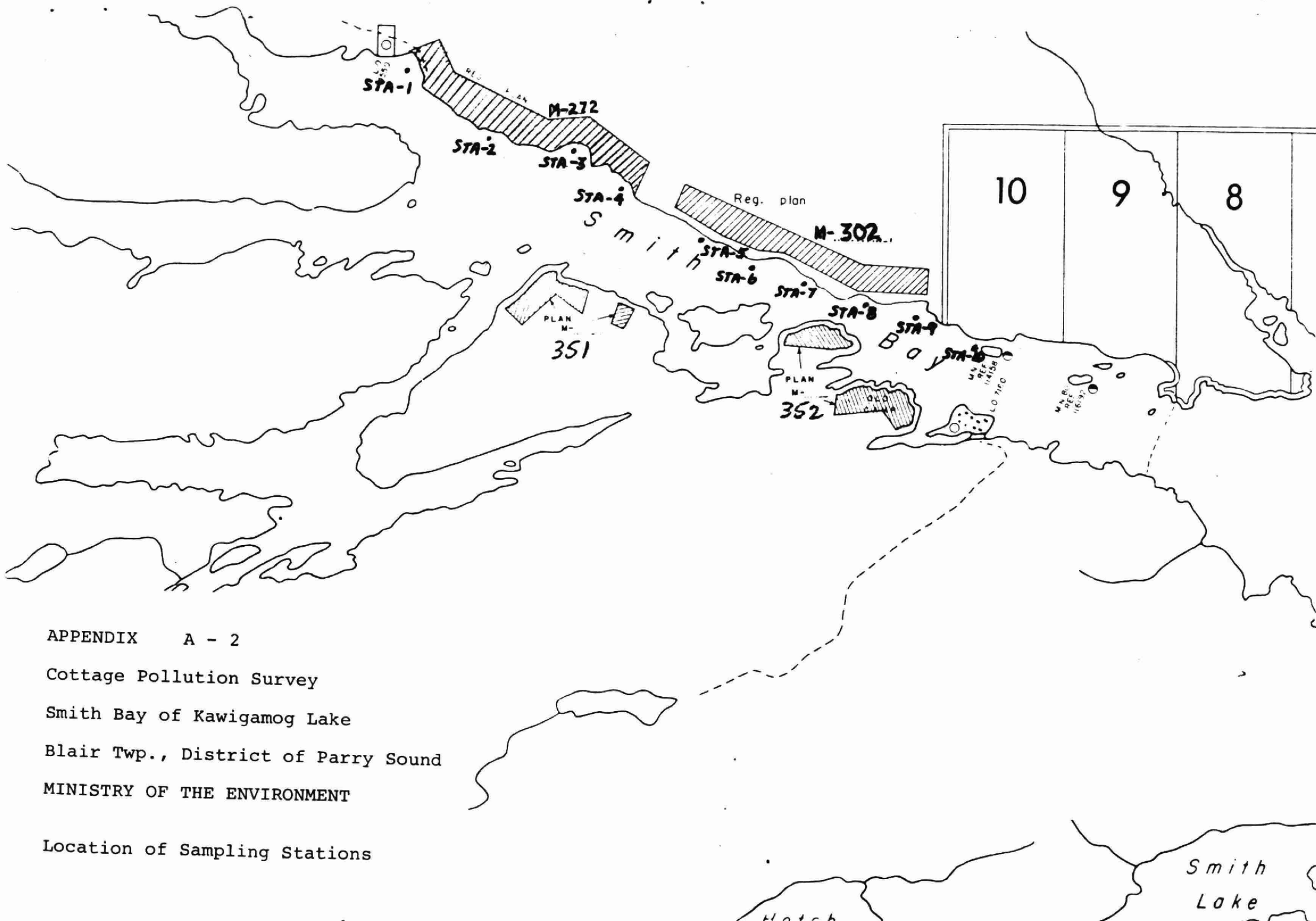
Cottage Pollution Survey

Smith Bay of Kawigamog Lake

Blair Twp., District of Parry Sound

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Location Plan of Survey Area



APPENDIX A - 2

Cottage Pollution Survey

Smith Bay of Kawigamog Lake

Blair Twp., District of Parry Sound

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Location of Sampling Stations

Smith
Lake

TABLE 1BACTERIOLOGICAL EXAMINATION RESULTSSMITH BAY OF KAWIGAMOG LAKECOTTAGE POLLUTION SURVEY

<u>SAMPLE STATION NO.</u>	<u>COLIFORMS PER 100/ml</u>	
	<u>TOTAL</u>	<u>FAECAL</u>
1	0	0
2	75	8
3	8	0
4	15	2
5	10	0
6	10	0
7	22	0
8	4	0
9	12	0
10	22	0

NOTE: Location of sample stations is shown in Appendix A-2
Water samples collected August 19, 1976.

TABLE IISMITH BAY OF KAWIGAMOG LAKECOTTAGE POLLUTION SURVEYCHEMICAL ANALYSES

Sample Station Number	B.O.D. mg/l	Suspended Solids mg/l	Total Kjeldahl As N mg/l	Total Phosphorus As P mg/l	Free Ammonia mg/l	Nitrite mg/l	Nitrate mg/l	Conductivity μmhos/cm
1	1.2	3.7	.38	.021	.018	.002	<.005	45
2	1.2	3.2	.40	.022	.014	.002	<.005	41
3	1.0	2.6	.39	.021	.014	.002	<.005	41
4	1.2	2.7	.40	.026	.010	.002	<.005	41
5	1.2	2.8	.35	.017	.010	.002	<.005	41
6	1.6	2.5	.40	.022	.008	.002	<.005	40
7	1.4	2.9	.38	.023	.008	.001	<.005	40
8	1.4	2.4	.37	.019	.030	.002	<.005	40
9	1.2	1.9	.38	.019	.012	.001	<.005	40
10	1.4	2.0	.35	.021	.012	.001	<.005	41

NOTE: Location of sample stations is shown in Appendix A-2

Water samples collected August 19, 1976.

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